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ART 34 AMENDHARD SURFACE TREATING COMPOSITIONS

10 This invention relates to an improved process for sanitizing and/or disinfecting and/or cleaning and/or the removal of stains from hard and soft surfaces and to compositions used in such processes.

15 The use of oxygen bleaches in compositions for sanitizing and/or disinfecting and/or cleaning and/or for stain removal has been known for a long time and many such compositions are available. However a common difficulty in formulating such a composition is to ensure that it remains stable during storage but is sufficiently active on use. This is particularly difficult to achieve in liquid compositions containing peroxygen bleach. In addition it is extremely difficult to include other active substances, for
20 example, cationic surfactants having germicidal properties, essential oils, or other antimicrobial/germicidal agents, into such systems. Such germicidal agents typically do not bleach stains. It is desirable in some instances to have a formulation which can effect both sanitization and bleaching without having to resort to products containing chlorine bleach, which can cause dye damage and harmful effects on surfaces. Many
25 solutions have been proposed to this problem but most of these require the use of expensive stabilising components or of complex formulation processes.

The present invention provides a composition of hydrogen peroxide with one or more cationic surfactants having germicidal properties, essential oils, other
30 antimicrobial/germicidal agents, anionic surfactants, nonionic surfactants, or pH modifiers which has acceptable stability of both one or more cationic surfactants having germicidal properties, essential oils, or antimicrobial/germicidal agents, anionic surfactants, nonionic surfactants, or pH modifiers and the peroxide after manufacture, but which is capable of providing effective sanitizing and/or disinfecting and/or cleaning
35 and/or stain removal power to hard surfaces when used by the consumer.

We have found that by separating the hydrogen peroxide from the one or more cationic surfactants having germicidal properties, essential oils, other
antimicrobial/germicidal agents, anionic surfactants, nonionic surfactants, or pH
40 modifiers, excellent stability is achieved. This is due to hydrogen peroxide being stable in acidic environments ($\text{pH} < 7$) but active as a bleaching agent in alkaline environments ($\text{pH} > 7$).

Claims

1. A process for sanitizing and/or disinfecting and/or cleaning and/or stain removal at a surface, comprising applying to that surface a mixture of:

(a) an aqueous composition comprising hydrogen peroxide; and

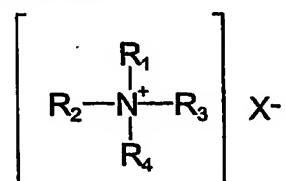
(b) an aqueous composition comprising one or more cationic surfactants having germicidal properties, essential oils, other antimicrobial/germicidal agents, anionic surfactants, non-ionic surfactants, and pH modifiers,

wherein components (a) and/or (b) optionally comprise at least one surfactant and are mixed not more than two hours before being applied to the surface requiring sanitizing and/or disinfecting and/or cleaning and/or stain removal.

2. The process of claim 1 wherein after both components (a) and (b) are applied to the surface, the pH of the resulting solution is greater than 7.00.

3. The process according to claims 1 or 2 wherein (b) is cationic surfactants having germicidal properties.

4. The process according to claim 3 wherein cationic surfactants having germicidal properties is characterized by the formula:



wherein at least one of R_1 , R_2 , R_3 and R_4 is a alkyl, aryl or alkylaryl substituent of from 6 to 26 carbon atoms, the remaining R_1 , R_2 , R_3 and R_4 are hydrocarbons usually containing no more than 12 carbon atoms, and X is any salt-forming anion.

5. The process according to claims 1 or 2 wherein (b) is essential oils.

6. The process according to claim 5 wherein (b) is selected from oils of anise, citrus, aniseed, roses, mint, camphor, lemon, orange, rosemary, wintergreen, thyme, lavender, cloves, hops, tea tree, citronella, wheat, barley, lemongrass, cedar leaf, cedarwood, cinnamon, fleagrass, geranium, sandalwood, violet, cranberry, eucalyptus, vervain, peppermint, gum benzoin, basil, fennel, fir, balsam, menthol, ocmea origanum,

hydastis carradensis, berberidaceae daceae, ratanhia, curcuma longa, anethol, catechole, camphene, pinocarvone, cedrol, thymol, eugenol; eucalyptol, ferulic acid, farnesol, hinokitiol, tropolone, limonene, menthol, methyl salicylate, carvacol, terpineol, verbenone, berberine, ratanhia extract, caryophellene oxide, citronellic acid, curcumin, nerolidol and geraniol and mixtures thereof.

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7. The process according to claims 1 or 2 wherein (b) is other antimicrobial/germicidal agents.

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8. The process according to claim 7 wherein (b) is selected from pyriithiones especially the zinc complex, dimethyldimethylol hydantoin,

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methylchloroisothiazolinone/methylisothiazolinone, benzoic acid, benzoyl peroxide, salicylamides, picric acid, xlenol, pyrocatechol, pyrogallol, phloroglucin, imidazolidinyl urea, diazolidinyl urea, benzyl alcohol, 2-bromo-2-nitropropane-1,3-diol, formalin, iodopropenyl butylcarbamate, chloroacetamide, methanamine, methyldibromonitrile

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glutaronitrile, glutaraldehyde, 5-bromo-5-nitro-1,3-dioxane, phenethyl alcohol, o-phenylphenol/sodium o-phenylphenol, sodium hydroxymethylglycinate, polymethoxy bicyclic oxazolidine, dimethoxane, thimersal, dichlorobenzyl alcohol, captan, chlorphenenesin, hexachlorophene, tetrachlorophene, 3,3'-dibromo-5,5'-dichloro-2,2'-dihydroxydiphenylamine, dichlorophene, chlorbutanol, glyceryl laurate, halogenated diphenyl ethers, 2,4,4'-trichloro-2'-hydroxy-diphenyl ether, 2,2'-dihydroxy-5,5'-dibromo-

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diphenyl ether, phenolic compounds, phenol, 2-methyl phenol, 3-methyl phenol, 4-methyl phenol, 4-ethyl phenol, 2,4-dichlorophenol, p-nitrophenol, 2,4-dimethyl phenol, 2,5-dimethyl phenol, 3,4-dimethyl phenol, 2,6-dimethyl phenol, 4-n-propyl phenol, 4-n-butyl phenol, 4-n-amyl phenol, 4-tert-amyl phenol, 4-n-hexyl phenol, 4-n-heptyl phenol, mono- and poly-alkyl and aromatic halophenols, p-chlorophenol, methyl p-chlorophenol, ethyl p-chlorophenol, n-propyl p-chlorophenol, n-butyl p-chlorophenol, n-amyl p-chlorophenol, sec-amyl p-chlorophenol, n-hexyl p-chlorophenol, cyclohexyl p-chlorophenol, n-heptyl p-chlorophenol, n-octyl p-chlorophenol, o-chlorophenol, methyl o-chlorophenol, ethyl o-chlorophenol, n-propyl o-chlorophenol, n-butyl o-chlorophenol, n-

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amyl o-chlorophenol, tert-amyl o-chlorophenol, n-hexyl o-chlorophenol, n-heptyl o-chlorophenol, o-benzyl p-chlorophenol, o-benzyl-m-methyl p-chlorophenol, o-benzyl-m, m-dimethyl p-chlorophenol, o-phenylethyl p-chlorophenol, o-phenylethyl-m-methyl p-chlorophenol, 3-methyl p-chlorophenol, 3,5-dimethyl p-chlorophenol, 6-ethyl-3-methyl p-chlorophenol, 6-n-propyl-3-methyl p-chlorophenol, 6-iso-propyl-3-methyl p-chlorophenol, 2-ethyl-3,5-dimethyl p-chlorophenol, 6-sec-butyl-3-methyl p-chlorophenol, 2-iso-propyl-3,5-dimethyl p-chlorophenol, 6-diethylmethyl-3-methyl p-chlorophenol, 6-iso-propyl-2-ethyl-3-methyl p-chlorophenol, 2-sec-amyl-3,5-dimethyl p-chlorophenol, 2-diethylmethyl-

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5 3,5-dimethyl p-chlorophenol, 6-sec-octyl-3-methyl p-chlorophenol, o-benzylphenol, p-chloro-o-benzylphenol, cresols (o-, m-, p-), p-chloro-m-cresol, p-bromophenol, methyl p-bromophenol, ethyl p-bromophenol, n-propyl p-bromophenol, n-butyl p-bromophenol, n-amyl p-bromophenol, sec-amyl p-bromophenol, n-hexyl p-bromophenol, cyclohexyl p-bromophenol, o-bromophenol, tert-amyl o-bromophenol, n-hexyl o-bromophenol, n-propyl-m,m-dimethyl o-bromophenol, 2-phenyl phenol, 4-chloro-2-methyl phenol, 4-chloro-3-methyl phenol, 4-chloro-3,5-dimethyl phenol, 2,4-dichloro-3,5-dimethylphenol, 3,4,5,6-terabromo-2-methylphenol, 5-methyl-2-pentylphenol, 4-isopropyl-3-methylphenol, para-chloro-meta-xenol, chlorothymol, phenoxyethanol, phenoxyisopropanol, 5-chloro-2-hydroxydiphenylmethane, resorcinol and its derivatives, 15 resorcinol, methyl resorcinol, ethyl resorcinol, n-propyl resorcinol, n-butyl resorcinol, n-amyl resorcinol, n-hexyl resorcinol, n-heptyl resorcinol, n-octyl resorcinol, n-nonyl resorcinol, phenyl resorcinol, benzyl resorcinol, phenylethyl resorcinol, phenylpropyl resorcinol, p-chlorobenzyl resorcinol, 5-chloro 2,4-dihydroxydiphenyl methane, 4'-chloro 2,4-dihydroxydiphenyl methane, 5-bromo 2,4-dihydroxydiphenyl methane, 4'-bromo 2,4-dihydroxydiphenyl methane, bisphenolic compounds, 2,2'-methylene bis(4-chlorophenol), 2,2'-methylene bis(3,4,6-trichlorophenol), 2,2'-methylene bis(4-chloro-6-bromophenol), bis(2-hydroxy-3,5-dichlorophenyl) sulphide, bis(2-hydroxy-5-chlorobenzyl)sulphide, benzoic esters parabens such as methylparaben, propylparaben, butylparaben, ethylparaben, isopropylparaben, isobutylparaben, benzylparaben, sodium 25 methylparaben, sodium propylparaben, halogenated carbanilides, 3,4,4'-trichlorocarbanilides, 3-trifluoromethyl-4,4'-dichlorocarbanilide, and 3,3',4-trichlorocarbanilide.

9. The process according to claims 1 or 2 wherein (b) is an anionic surfactant.

10. The process according to claims 1 or 2 wherein (b) is a non-ionic surfactant.

11. The process according to claims 1 or 2 wherein (b) is a mixture of anionic surfactant and non-ionic surfactant.

12. The process according to claims 1 or 2 wherein (b) is a pH modifier.

13. The process according to any one of claims 1 to 12 wherein the pH of component (b) is higher than the pH of component (a).

14. A two-compartment dispenser comprising

5 a first compartment comprising an aqueous composition comprising hydrogen peroxide;

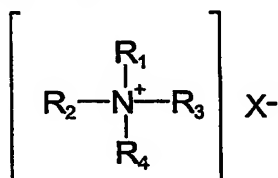
10 a second compartment comprising an aqueous composition comprising one or more cationic surfactants having germicidal properties, essential oils, other antimicrobial/germicidal agents, anionic surfactants, non-ionic surfactants, and pH modifiers; and

15 dispensing means adapted to dispense the contents (or part thereof) of the compartments on to a surface either sequentially or simultaneously to form a mixture thereof.

15. The dispenser according to claim 14 wherein the mixture thereby formed has a pH of greater than 7.00.

20 16. The process according to claim 15 wherein (b) is cationic surfactants having germicidal properties.

17. The process according to claim 16 wherein cationic surfactants having germicidal properties is characterized by the formula:



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wherein at least one of R_1 , R_2 , R_3 and R_4 is a alkyl, aryl or alkylaryl substituent of from 6 to 26 carbon atoms, the remaining R_1 , R_2 , R_3 and R_4 are hydrocarbons usually containing no more than 12 carbon atoms, and X is any salt-forming anion.

30 18. The process according to claim 14 wherein (b) is essential oils.

19. The process according to claim 18 wherein (b) is selected from oils of anise, citrus, aniseed, roses, mint, camphor, lemon, orange, rosemary, wintergreen, thyme, lavender, cloves, hops, tea tree, citronella, wheat, barley, lemongrass, cedar leaf, cedarwood, cinnamon, fleagrass, geranium, sandalwood, violet, cranberry, eucalyptus, vervain, peppermint, gum benzoin, basil, fennel, fir, balsam, menthol, ocmea origanum, hydastis carradensis, berberidaceae daceae, ratanhiae, curcuma longa, anethol, catechole, camphene, pinocarvone, cedrol, thymol, eugenol, eucalyptol, ferulic acid, farnesol, hinokitiol, tropolone, limonene, menthol, methyl salicylate, carvacol, terpineol,

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5 verbenone, berberine, ratanhia extract, caryophellene oxide, citronellic acid, curcumin, nerolidol and geraniol and mixtures thereof.

20. The process according to claim 14 wherein (b) is other antimicrobial/germicidal agents.

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21. The process according to claim 6 wherein (b) is selected from pyrrithiones especially the zinc complex, dimethyldimethylol hydantoin, methylchloroisothiazolinone/methylisothiazolinone, benzoic acid, benzoyl peroxide, salicylamides, picric acid, xlenol, pyrocatechol, pyrogallol, phloroglucin, imidazolidinyl
15 urea, diazolidinyl urea, benzyl alcohol, 2-bromo-2-nitropropane-1,3-diol, formalin, iodopropenyl butylcarbamate, chloroacetamide, methanamine, methyldibromonitrile glutaronitrile, glutaraldehyde, 5-bromo-5-nitro-1,3-dioxane, phenethyl alcohol, o-phenylphenol/sodium o-phenylphenol, sodium hydroxymethylglycinate, polymethoxy bicyclic oxazolidine, dimethoxane, thimersal, dichlorobenzyl alcohol, captan,
20 chlorphenenesin, hexachlorophene, tetrachlorophene, 3,3'-dibromo-5,5'-dichloro-2,2'-dihydroxydiphenylamine, dichlorophene, chlorbutanol, glyceryl laurate, halogenated diphenyl ethers, 2,4,4'-trichloro-2'-hydroxy-diphenyl ether, 2,2'-dihydroxy-5,5'-dibromo-diphenyl ether, phenolic compounds, phenol, 2-methyl phenol, 3-methyl phenol, 4-methyl phenol, 4-ethyl phenol, 2,4-dichlorophenol, p-nitrophenol, 2,4-dimethyl phenol,
25 2,5-dimethyl phenol, 3,4-dimethyl phenol, 2,6-dimethyl phenol, 4-n-propyl phenol, 4-n-butyl phenol, 4-n-amyl phenol, 4-tert-amyl phenol, 4-n-hexyl phenol, 4-n-heptyl phenol, mono- and poly-alkyl and aromatic halophenols, p-chlorophenol, methyl p-chlorophenol, ethyl p-chlorophenol, n-propyl p-chlorophenol, n-butyl p-chlorophenol, n-amyl p-chlorophenol, sec-amyl p-chlorophenol, n-hexyl p-chlorophenol, cyclohexyl p-chlorophenol,
30 chlorophenol, n-heptyl p-chlorophenol, n-octyl p-chlorophenol, o-chlorophenol, methyl o-chlorophenol, ethyl o-chlorophenol, n-propyl o-chlorophenol, n-butyl o-chlorophenol, n-amyl o-chlorophenol, tert-amyl o-chlorophenol, n-hexyl o-chlorophenol, n-heptyl o-chlorophenol, o-benzyl p-chlorophenol, o-benzyl-m-methyl p-chlorophenol, o-benzyl-m, m-dimethyl p-chlorophenol, o-phenylethyl p-chlorophenol, o-phenylethyl-m-methyl p-chlorophenol,
35 chlorophenol, 3-methyl p-chlorophenol, 3,5-dimethyl p-chlorophenol, 6-ethyl-3-methyl p-chlorophenol, 6-n-propyl-3-methyl p-chlorophenol, 6-iso-propyl-3-methyl p-chlorophenol, 2-ethyl-3,5-dimethyl p-chlorophenol, 6-sec-butyl-3-methyl p-chlorophenol, 2-iso-propyl-3,5-dimethyl p-chlorophenol, 6-diethylmethyl-3-methyl p-chlorophenol, 6-iso-propyl-2-ethyl-3-methyl p-chlorophenol, 2-sec-amyl-3,5-dimethyl p-chlorophenol, 2-diethylmethyl-3,5-dimethyl p-chlorophenol, 6-sec-octyl-3-methyl p-chlorophenol, o-benzylphenol, p-chloro-o-benzylphenol, cresols (o-, m-, p-), p-chloro-m-cresol, p-bromophenol, methyl p-bromophenol, ethyl p-bromophenol, n-propyl p-bromophenol, n-butyl p-bromophenol, n-

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5 amyl p-bromophenol, sec-amyl p-bromophenol, n-hexyl p-bromophenol, cyclohexyl p-bromophenol, o-bromophenol, tert-amyl o-bromophenol, n-hexyl o-bromophenol, n-propyl-m,m-dimethyl o-bromophenol, 2-phenyl phenol, 4-chloro-2-methyl phenol, 4-chloro-3-methyl phenol, 4-chloro-3,5-dimethyl phenol, 2,4-dichloro-3,5-dimethylphenol, 3,4,5,6-terabromo-2-methylphenol, 5-methyl-2-pentylphenol, 4-isopropyl-3-
10 methylphenol, para-chloro-meta-xlenol, chlorothymol, phenoxyethanol, phenoxyisopropanol, 5-chloro-2-hydroxydiphenylmethane, resorcinol and its derivatives, resorcinol, methyl resorcinol, ethyl resorcinol, n-propyl resorcinol, n-butyl resorcinol, n-amyl resorcinol, n-hexyl resorcinol, n-heptyl resorcinol, n-octyl resorcinol, n-nonyl resorcinol, phenyl resorcinol, benzyl resorcinol, phenylethyl resorcinol, phenylpropyl
15 resorcinol, p-chlorobenzyl resorcinol, 5-chloro 2,4-dihydroxydiphenyl methane, 4'-chloro 2,4-dihydroxydiphenyl methane, 5-bromo 2,4-dihydroxydiphenyl methane, 4'-bromo 2,4-dihydroxydiphenyl methane, bisphenolic compounds, 2,2'-methylene bis(4-chlorophenol), 2,2'-methylene bis(3,4,6-trichlorophenol), 2,2'-methylene bis(4-chloro-6-bromophenol), bis(2-hydroxy-3,5-dichlorophenyl) sulphide, bis(2-hydroxy-5-
20 chlorobenzyl)sulphide, benzoic esters parabens such as methylparaben, propylparaben, butylparaben, ethylparaben, isopropylparaben, isobutylparaben, benzylparaben, sodium methylparaben, sodium propylparaben, halogenated carbanilides, 3,4,4'-trichlorocarbanilides, 3-trifluoromethyl-4,4'-dichlorocarbanilide, and 3,3',4-trichlorocarbanilide.

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22. The process according to claim 14 wherein (b) is an anionic surfactant.
23. The process according to claim 14 wherein (b) is a non-ionic surfactant.
- 30 24. The process according to claim 14 wherein (b) is a mixture of anionic surfactant and non-ionic surfactant.
25. The process according to claim 14 wherein (b) is a pH modifier.
- 35 26. The process according to any one of claims 14 to 25 wherein the pH of component (b) is higher than the pH of component (a).

[received by the International Bureau on 19 February 2004 (19.02.04);
new claims 27, 28 added; remaining claims unchanged (1 page)]

27. A process for sanitizing and/or disinfecting and/or cleaning and/or stain removal at a surface according to claim 1, comprising applying to that surface a mixture of:
- (a) an aqueous composition comprising hydrogen peroxide; and
 - (b) an aqueous composition comprising:
 - a cationic surfactant having germicidal properties,
 - an amine oxide surfactants;
 - one or more organic solvents;
 - a pH modifier;
 - and optionally one or more essential oils, other antimicrobial/germicidal agents, other anionic surfactants, other non-ionic surfactants, and other pH modifiers,
- wherein components (a) and/or (b) optionally are mixed not more than two hours before being applied to the surface requiring sanitizing and/or disinfecting and/or cleaning and/or stain removal, and the resulting solution has a pH of greater than 7.00.
28. A two-compartment dispenser comprising:
- a first compartment containing (a) an aqueous composition comprising hydrogen peroxide; and
 - a second compartment containing (b) an aqueous composition comprising:
 - a cationic surfactant having germicidal properties,
 - an amine oxide surfactants;
 - one or more organic solvents;
 - a pH modifier;
 - and optionally one or more essential oils, other antimicrobial/germicidal agents, other anionic surfactants, other non-ionic surfactants, and other pH modifiers,
- dispensing means adapted to dispense the contents (or part thereof) of the first compartment and the second compartment onto a surface either sequentially or simultaneously to form a mixture thereof, wherein the resulting mixture has a pH of greater than 7.00.